Civil Air Patrol

1980 Cessna 172N – N23NJ

Air Plains 180 HP Conversion

Serial number 17265685 thru 17271034

Preflight Cabin

1. Pilot's Operating Handbook Available
2. Parking Brake ..... Set
3. Hobbs & Tach ..... Check
4. Fire Extinguisher .....Charged
5. Squawk Sheet..... Check
6. Documents.....AROW in airplane
7. Control/Avionics Lock ..... Remove
8. Ignition Switch .....Off
9. Avionics Power Switch .....Off
10. Master Switch.....On

Warning

When turning on the master switch, using an external power source, or pulling the propeller through by hand, treat the propeller as if the ignition switch were on. Do not stand, nor allow anyone else to stand, within the arc of the propeller, since a loose or broken wire, or a component malfunction, could cause the propeller to rotate.

11. Wing Flaps 30º
12. Fuel Quantity Indicators..... Check Quantity
13. Avionics Power Switch ……On
14. Avionics Cooling Fan..... ..Check Audibly for Operation
15. Pitot Heat .....Check As Required
16. Lights..... Check
17. Master Switch.....Off
18. Static Pressure Alternate Source Valve .....Off
19. Fuel Selector ..... Both

Preflight Empennage

1. Baggage Door.....Check for security and lock
2. Rudder Gust Lock..... Remove
3. Tail Tie-Down.....Disconnect
4. Control Surfaces ..... Check

Preflight Right Wing trailing edge

1. Flap ..... Check
2. Aileron ..... Check
3. Wingtip & Light..... Check

Preflight Right Wing

1. Wing Tie Down.....Disconnect
2. Main Wheel Tire & Brake..... Check
3. Fuel Sump.....Drain
4. Fuel Selector Quick-Drain Valve .....Drain
5. Fuel Quantity.....Visually Check
6. Fuel Filler Cap..... Secure, vent unobstructed

Nose

1. Engine Oil Dipstick 6-8 Quarts (8 for extended flights)
2. Engine Oil Filler Cap. Check Secure
3. Fuel Strainer Drain Knob.. Pullout to Drain
4. Prop & Spinner..... Check
5. Engine Cooling Air Inlets.....Clear
6. Carburetor Air Filter..... Check
7. Nose Wheel, Strut & Tire ..... Check
8. Nose Tie-Down .....Disconnect
9. Static Source..... Check (Left side)
10. Windscreen .....Check/Clean

Preflight Left Wing

1. Main Wheel Tire & Brake..... Check
2. Fuel Sump.....Drain
3. Fuel Quantity.....Visually Check
4. Fuel Filler Cap.....Secure
5. Pitot Tube Cover .....Remove
6. Fuel Vent.....Check Clear
7. Stall Warning..... Check
8. Wing Tie-Down .....Disconnect
9. Landing Lights……..Check
10. Left Wingtip & Light.....Check

Preflight Left Wing Trailing Edge

1. Aileron ..... Check
2. Flap ..... Check

PASSENGER BRIEF

1. **Seat Belts / Shoulder Harness**
2. **Personal Electronic Devices off**
3. **Air Vents / Comfort**
4. **Fire Extinguisher Location / Operation**
5. **Emergency Procedures & Exits**

MISSION BRIEF

1. **Mission Objective**
2. **Destination, WX, Route, Alt, ETE**
3. **NOTAMS**
4. **Crew Coordination & CRM**
5. **Sterile Cockpit Procedures**
6. **Cockpit Layout**
7. **Intercom & Radio Usage**
8. **Seats, Seatbelts, Doors**
9. **Emergency Action & Equipment**

Before Starting Engine

1. Preflight Inspection.....Complete
2. Passenger Brief.....Complete
3. Seats / Belts / Shoulder Harness ..... Adjust and Lock
4. Avionics Power Switch ..... Off

Caution

The avionics power switch must be OFF during engine start to prevent possible damage to avionics.

5. Circuit Breakers.....Check In
6. Electrical Equipment..... Off
7. Beacon……On
8. Fuel Selector Valve .....Both
9. Brakes ..... Test & Set

Starting Engine

1. Prime .. As Required (2 to 6 strokes)
2. Carburetor Heat.....Cold
3. Throttle .....Open 1/8 Inch
4. Mixture.....Rich
5. Propeller Area .....Clear
6. Master Switch..... On
7. Ignition Switch .....Start
8. Throttle ..... 800 to 1000 RPM
9. Oil Pressure.....Check
10. Starter .....Check Disengaged
11. Nav Lights..... On as required
12. Avionics Power Switch..... On
13. Radios..... On
14. Taxi Lights ..... As Required
15. Flaps .....Up
16. Transponder .....TEST/STBY
17. ATIS / AWOS.....Copy
18. Altimeter.. Set (Verify Within 75' of Fld Elev.)
19. Clearance Delivery/Ground Control .....Contact

Taxi

1. Brakes .....Test
2. Heat / Vents / Defrost .. As Required
3. Attitude Indicator.....Verify Proper Operation
4. Turn Coordinator .....Verify Proper Operation
5. H.I. & Compass .....Verify Proper Operation
6. Fuel Selector Valve..Check & Set to Both

Before Takeoff - Run-Up

1. Parking Brake.....Set
2. Seats / Belts / Shoulder Harness ..... Check Secure
3. Cabin Doors & Windows..Closed and Locked
4. Flight Controls ..... Free & Correct
5. Flight Instruments & H.I. ... .Check & Set
6. Fuel Quantity .....Check
7. Primer……..…In and Locked
8. Mixture.....Rich
9. Fuel Selector Valve... Recheck Both
10. Elevator & Rudder Trim ..... Set for Takeoff
11. Throttle.....1700 RPM
12. Magnetos..Max Drop 125 RPM - 50 RPM differential
13. Carb Heat.....Check for RPM Drop
14. Suction Gauge .....Check
15. Engine Inst & Ammeter.....Check
16. Throttle.....Idle Check, then 800 to 1000 RPM
17. Throttle Friction Lock .....Adjust
18. Strobe Lights/Pulse Lights (If installed) ..... As Desired
19. Radios / Transponder .....Set
20. Flaps set for Takeoff .....0°-10°
21. Carb Heat.....Cold
22. Takeoff Briefing.....Complete
23. Doors & Windows ..... Latched
24. Lights.....Set
25. Transponder.....Set to ALT

26. Time ..... Record
27. Parking Brake..... Release

Takeoff

1. Flaps .....0°-10 °
2. Carb Heat..... Cold
3. Throttle..... Full Open
4. Mixture ..... Full Rich or Max Power
5. Engine Instruments.....In Green
6. Rotate ..... 55 KIAS
7. Climb Speed ..... 75 to 85 KIAS
   - Short Field T.O. ... ..10° Flaps / 57 KIAS Until Clear
   - Soft Field T.O…10° Flaps / Ground Effect ASAP
6. Wing Flaps..Retract (above 70 KIAS)

Enroute Climb

1. Airspeed.....75 - 85 KIAS Normal

Note
If a maximum performance climb is necessary, use speeds shown in the Rate Of Climb chart in POH Section 5.

2. Throttle..... Full Open
3. Fuel Selector..... Both
4. Mixture .....Full Rich or Max RPM
5. Engine Instruments..... Check

Cruise

1. Power. 2100-2700 RPM (no more than 75% is recommended)
2. Elevator Trim.....Adjust
3. Mixture .....Lean
4. Engine Instruments / Fuel..... Check
5. Heading Indicator (H.I.).To Compass
6. Lights .....As Required
7. Flight Plan ..... Activate as Required

Descent

1. Heading Indicator..... To Compass
2. Altimeter..... Set
3. Fuel Selector..... Both
4. Lights .....As Required
5. Engine Instruments..... Check
6. Mixture ..... …Adjust for Smooth Operation (full rich for idle power)
7. Carb Heat....Full Heat as Required

Before Landing

1. Seat, Seat Belts, Shoulder Harness .....Secure
2. Fuel Selector Valve .....Both
3. Mixture .....Rich
4. Carb Heat..... ..On

Normal Landing

1. Airspeed ... 65-75 KIAS (Flaps Up)
2. Wing Flaps ... …As Desired (0-10º Below 110 KIAS, 10 -30º Below 85 KIAS)
3. Airspeed 60-70 KIAS (Flaps Down)
4. Trim ..... Adjust
5. Touchdown …….Main Wheel First
6. Landing Roll…….Lower Nose Wheel Gently
7. Braking……Minimum Required

Short Field Landing

1. Airspeed ... 65-75 KIAS (Flaps Up)
2. Wing Flaps .... 30º (below 85 KIAS)
3. Airspeed ... Maintain 62 KIAS (Until Flare)
4. Trim ..... Adjust Power…. .....Reduce to idle after clearing obstacle
5. Touchdown..... Main Wheels First
6. Brakes .....Apply Heavily
7. Wing Flaps .....Retract

Balked Landing

1. Throttle .....Full Open
2. Carb Heat.....Cold
3. Wing Flaps .....20° (Immediately)
4. Climb Speed..... 60 KIAS
5. Wing Flaps ….10º (Until Obstacles are Cleared)
6. Wing Flaps….Retract (After reaching a safe altitude and 65 KIAS)

After Landing (Clear of Runway)

1. Carb Heat.....Cold
2. Wing Flaps .....Up
3. Lights..... As Required
4. Transponder..... STBY & 1200
5. Mixture ..... Lean
6. Pitot Heat ..... Off

Securing Aircraft

1. Parking Brake.....Set
2. Throttle ..... Idle
3. Avionics Power & Switches ..... Off
4. Magnetos..... Check for Ground
5. Mixture.....Idle Cut Off
6. Ignition ..... Off
7. Master Switch ……..Off
8. Control/Avionics Lock.....Install
9. Parking Brake ..... Off
10. Fuel Selector..... Left or Right
11. Hobbs & Tach ..... Record
12. Aircraft ..... Secured & Locked
13. Flight Plan .....Closed

V Speeds and Specs

- X-Wind (Max Demo'd)..... 15 Knots
- Vr Rotation Speed ..... 55 KIAS
- Vx Best Angle Climb..... 62 KIAS
- Vy Best Rate Climb ..... 76 KIAS
- Vso Stall w/ Flaps..... 40 KIAS
- Vs1 Stall w/o Flaps..... 50 KIAS
- Best Glide (2550 Lbs)..... 65 KIAS
- Va Max Abrupt Ctrl (2550 Lbs). 105 KIAS
- Va Max Abrupt Ctrl (2150 Lbs)... 95 KIAS
- Va Max Abrupt Ctrl (1750 Lbs).... 85 KIAS
- Vno Max Structural Cruise ....127 KIAS
- Vne Never Exceed ..... 158 KIAS
- Vfe 10°-Full Flaps..... 85 KIAS
- Max Window Open Speed .....…158 KIAS

V Speeds and Specs are based on sea level. Consult the Air Plains Services, Corp. FAA Approved Airplane Flight Manual Supplement for V speed and Specs for operations above sea level.

General...

- EMERGENCY 121.50
- Unicom 122.70-122.80-122.95 123.00-123.05
- Multicom ..... 122.90 (CTAF)
- Flight Service..... 122.20 (Most Common) 122.10-122.60-123.60
- Flight Watch 122.00
- Air to Air.....122.75-122.85-123.45

Transponder Codes

- 1200.....VFR
- 7500.....HIJACK
- 7600..... LOST COMMS
- 7700.....EMERGENCY

Aircraft Information

- Gross Weight Capacity..... 2550 (Takeoff) .....2550 (Landing)
- Engine.....Lycoming O-360-A4M
- Max Power..... 180 BHP
- Max Cont Engine Speed 2540 RPM
- Max Engine Speed .....2700 RPM
- Fuel Type..... 100LL (Blue)
- Fuel Capacity (Standard). 40 Gal Usable
- Oil Type .....Exxon Elite 20W-50
- Oil Capacity .....8 Qts (Minimum 6)
- Electrical .....24 - 28 Volt / 60 Amp
- Tire PressureNose-45 PSI / Main-38 PSI

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Reviewed by:

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Wing Director of Maintenance **Date**

EMERGENCY PROCEDURES

1980 Cessna 172N –N23NJ

Air Plains 180 HP Conversion

Serial No. 17265685 to 17271034

Engine Failure During Takeoff Roll

1. **Throttle .....Idle**
2. **Brakes..... Apply**
3. Flaps ..... Retract
4. Mixture .....Idle Cut Off
5. Ignition Switch.....Off
6. Master Switch ……..Off

Engine Failure Immediately After Takeoff

1. **Airspeed .....**
   70 KIAS (Flaps Up)
   65 KIAS (Flaps Down)
2. Mixture.....Idle Cut Off
3. Fuel Selector .....Off
4. Ignition.....Off
5. Wing Flaps ..... As Required
6. Master Switch .....Off

Engine Failure During Flight (Restart)

1. **Airspeed ..... 75 KIAS**
2. **Carb Heat.....On**
3. **Fuel Selector .....Both**
4. Mixture.....Rich
5. Ignition..... Both (or START if propeller is stopped)
6. Primer.....In & Locked

Forced Landing Without Engine Power

1. Airspeed.....70 KIAS (Flaps Up)
   65 KIAS (Flaps Down)
2. Mixture ..... Idle Cut Off
3. Fuel Selector.....Off
4. Ignition .....Off
5. Wing Flaps.....As Required (30º Recommended)
6. Master Switch.....Off
7. Doors .....Unlatched
   Prior To Touchdown
8. Touchdown ..... Slightly Tail Low
9. Brakes..... Apply Heavily

Precautionary Landing With Engine Power

1. Seat belt, and Shoulder Harness……..Tighten
2. Wing Flaps.....20°
3. Airspeed..... 65 KIAS
4. Select Field .....Perform
   Fly Over Inspection
5. Avionics & Electrical Switches Off
6. Flaps.....30º on Final Approach
7. Airspeed..... 65 KIAS
8. Master Switches..... Off
9. Doors .....Unlatched
   Prior To Touchdown
10. Touchdown ..... Slightly Tail Low
11. Ignition Switch .....Off
12. Brakes ..... Apply Heavily

Engine Fire During Start

1. **Continue Cranking Engine**
2. If Engine Starts: ..... Power
   1700 RPM for a few minutes
3. Engine.... Shutdown and Inspect

If Engine Fails to Start:

4. **Throttle ..... Full Open**
5. **Mixture ..... Idle Cut Off**
6. **Cranking.....Continue**
7. **Fire Extinguisher .....Obtain**
8. **Master/Ignition/Fuel ..... Off**
9. **Fire ..... Extinguish**
10. Fire Damage .....Inspect

Engine Fire in Flight

1. **Mixture ..... Idle Cut Off**
2. **Fuel Selector..... Off**
3. Master Switch..... Off
4. Cabin Heat & Air..... Off
   (Except Overhead Vents)
5. Airspeed ..... 100 KIAS
   (If fire is not extinguished, increase glide speed to find an airspeed, which will provide an incombustible mixture.)
6. Forced Landing w/o Engine Power..... Execute

Electrical Fire in Flight

1. **Master Switch .....Off (Leave Ignition On)**
2. **Vents/Cabin Air/Heat . Closed**
3. **Fire Extinguisher .....Activate**

Warning
After discharging an extinguisher within a closed cabin, ventilate the cabin.

4. **Avionics Power Switch….Off**
5. **All Other Switches (Except Ignition).....Off**

If fire is extinguished & electrical power is necesary

6. Master Switch..... On
7. Circuit Breakers.....Check for Faulty circuit (Do Not Reset)
8. Radio Switches ……Off
9. Avionics Switch……On
10. Radio/Electrical Switches on one at a time w/ delay after each to locate short.
11. Vent cabin when assured the fire is extinguished

Cabin Fire

1. **Master Switch .....Off (Leave Ignition On)**
2. **Vents/Cabin Air/Heat . Closed**
3. **Fire Extinguisher ..... Activate**

Warning
After discharging an extinguisher within a closed cabin, ventilate the cabin.

4. Land…As soon as possible and inspect damage

Wing Fire

1. **Landing/Taxi Lights.....Off**
2. **Pitot Heat.....Off**
3. **Navigation Lights.....Off**
4. **Strobe Lights .....Off**

Note

Sideslip to keep flames away from the fuel tank and cabin, and land as soon as possible using flaps only as required for final approach and touchdown.

Icing

1. Pitot Heat.....On
2. Turn back or change altitude to obtain an outside air temp that is less conducive to icing.
3. Pull cabin heat control to full out and open defroster outlet to obtain maximum windshield defroster airflow.
4. Open the throttle to increase engine speed and minimize ice build-up on propeller blades
5. Watch for signs of carburetor air filter ice and apply carburetor heat as required. An unexplained loss in engine speed could be caused by carburetor ice or air intake filter ice. Lean the mixture if carb heat is used continuously.
6. Plan a landing at the nearest airport. With an extremely rapid ice build-up, select a suitable "off airport" landing site.
7. With ice accumulation of ¼ inch or more on the wing leading edges, be prepared for significantly higher stall speed.
8. Leave wing flaps retracted. With a severe ice build-up on the horizontal tail, the change in wing wake airflow direction caused by wing flap extension could result in a loss of elevator effectiveness.
9. Open left window and if practical scrape ice from a portion of the windshield for visibility in landing approach.
10. Perform landing approach using a forward slip, if necessary, for improved visibility.
11. Approach at 80 to 90 KIAS depending upon the amount of accumulation.
12. Perform a landing in level attitude.

Ditching

1. Radio ..... Transmit Mayday on 121.5 giving location and intentions and squawk 7700.
2. Heavy Objects..... Secure or Jettison.
3. Seat Belt, and Shoulder Harness ……Tighten
4. Approach

High winds, heavy seas .....Into the Wind.
Light winds, heavy swells ..... ……..Parallel to swells.

5. Flaps.....20º to 30º
6. Power.....Est. a 300 FPM descent at 55 KIAS.

If no power is available, approach at 70 KIAS with flaps up or at 65 KIAS with 10º flaps.

7. Cabin Doors ..... Unlatch
8. Touchdown ..... Level attitude at established descent rate.
9. Face..... Cushion at touchdown with folded coat or seat cushion.
10. Airplane .....Evacuate through Cabin doors. If necessary, open window and flood cabin to equalize pressure so doors can be opened.
11. Life vests and raft .....Inflate

For all other Emergency Abnormal Procedures. See the POH Section 3.

Airspeeds for Emergency Operations

Engine Failure After Takeoff:
Wing Flaps Up -- 70 KIAS
Wing Flaps Down -- 65 KIAS

Maneuvering Speed:
2550 Lbs – 105 KIAS
2150 Lbs – 95 KIAS
1750 Lbs – 85 KIAS

Maximum Glide:
2550 Lbs – 65 KIAS
2150 Lbs – 62 KIAS
1750 Lbs – 56 KIAS

Precautionary Landing With Engine Power – 65 KIAS

Landing Without Engine Power:
Wing Flaps Up – 70 KIAS
Wing Flaps Down – 65 KIAS

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